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## ABSTRACT

### CLINICAL EXPERIENCE OF THE INFECTED CARDIAC PACEMAKER

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Between August 1967 and July 1972, 27 pacemakers were implanted at Kyoto City Hospital in 18 cases, consisting of 16 A-V blocks, 1 S-A block and 1 sick sinus syndrome. Five cases have been performed replacement due to battery depletion, 1 due to electrode failure, 1 due to malplacement of the tip of the electrode catheter and 1 due to local mycotic infection which required following 5 times surgical managements.

Five of the pacemakers employed myocardial electrodes and 15 employed endocardial catheter electrodes. Of these former groups, 2 occurred electrode failure and 1 case of fatal chronic obstructive pulmonary disease (C.O.P.D.) developed the mycotic infection at the site of pacemaker implantation in 2 months after the operation. The offending organism was *Candida albicans*. Amphotericin-B and Mycostatin were administered, the infected pacemaker was taken out and the lead was connected to the external pacemaker. One month later, the pocket was cleared by open treatment, the sterilized permanent pacemaker was implanted in other pocket distant from the previous site of the pacemaker. But the mycotic abscess recurred again despite the administration of anti-mycotic agents and local treatment. The culture of this showed *Candida parakrussei*, *C. tropicalis*, *C. guilliermondi* and the abscess cavity continued along the lead to the heart. A new subsequent pacemaker was implanted in the left upper chest, the electrode was introduced via left subclavian vein and the infected cable was cut beneath the diaphragm and the pocket was left open. The remaining myocardial electrode was removed by thoracotomy 10 months after the first im-

plantation and there occurred no signs of relapse of candidiasis.

The existence of heart block and C.O.P.D. are not rare in older patients and the one exerts an unfavourable influence upon the clinical course of the other. The role of therapeutic systemic antibiotics in surgery remains controversial and the haphazard long-term use of antibiotics may increase the danger of late micotic infection. If infection has occurred in or around the pacemaker, removal of all foreign materials from the patient is necessary.

## REGIONAL HYPERINFLATION OF THE LUNG FOLLOWED BY BRONCHOCELE

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The bronchocele (bronchial mucocoele) is developed by the gradual accumulation of mucus in the distal portion of obstructed bronchial tree. The cause of the occlusion may be congenital structural defect of the bronchus, cicatricial shrinkage of the bronchial lumen or neoplasm and so on. While the lobar bronchial atresia produces invariably atelectasis, segmental or subsegmental bronchial atresia may not produce any change in volume of the involved lung segment or subsegment. Most of the mucocoele due to bronchial atresia have shown a striking degree of focal hyperinflation on the involved area because of the presence of collateral ventilation and check valve mechanism of the involved airways. This complex of bronchial atresia and focal emphysema was reviewed by Talner and others. In these reports they did not clear the origin of the bronchocele and the mechanism of development of hyperinflation.

In the present paper 4 patients with this syndrom are reported and some explanations on the development of bronchocele and hyperinflation mechanism are discussed based on the clinical and histological observations.

The cases were clinically examined on serial retrospective evaluation of roentgenograms, bronchograms, pulmonary arteriograms and so on. All cases were performed resection of the involved area and the specimens of the resected lung were examined by inflating through the dissected bronchi and were sectioned along bronchi for further histological evaluations.

The serial retrospective chest roentgenograms of the 3 out of 4 patients (a 9 y.o. boy and two 14 and 21 y.o. girls) showed tumor-like shadows near hila and increased hyperlucent region on the distal portion of the tumor since their childhood. In another 26 y.o. man,

a mass of shadow appeared on his chest roentgenogram at the age of 24.

At thoracotomy, all of 4 cases showed segmental or subsegmental bronchial atresia with regional bronchocele and the focal hyperinflation with air trapping as compared with normally ventilated adjacent regions. The findings were located in the left  $S_{1+2}$  of the 3 cases and right upper lobe of 1 case in which a congenital bronchial cyst was accompanied in right lower lobe near mediastinum.

It was confirmed that there was coexistence of regional immature bronchial cartilage formation and focal emphysema which suggested the relationship between collapse of the small bronchus and the regional emphysema. Another observation showed that the check valve mechanism induced from partial obstruction of segmental bronchus compressed by the bronchocele together with the surrounding segments developed to the hyperinflation of distal portion of the lung. These observations might prepare one of the clues to solve the mechanism of this syndrome.

## FAMILIAL OCCURENCE OF BRONCHIECTASIS

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A family is reported in which 4 cases of bronchiectasis were found in two generations with direct transmission of the condition between parents and children. There occurred 5 additional cases with expectoration of blood in four generations of the same family. Expectoration of blood which was common symptom in these 9 cases appeared at adult age, and the onset of symptom was not related to respiratory infections.

The marriage was not consanguinous.

An unusual familial occurrence of bronchiectasis reported here supports the standpoint advanced by Kartagener and others that hereditary predisposition may be a determining factor in certain cases of bronchiectasis.

## PULMONARY INSUFFICIENCY : EXPERIMENTAL AND CLINICAL ASPECTS

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Some experimental and clinical aspects in the problem of pulmonary insufficiency were discussed.

Although physiologic shunt is one of the most important factors in the pathogenesis of hypoxemia, anatomic shunt also should be considered in the specific diagnostic situation. For example, lung spider nevi which is often observed on the lung surface of chronic liver disease patients, may account for intrapulmonary A-V shunt. A-V fistula of this type is difficult to visualize by ordinary roentgenologic study including angiography.

The author demonstrated such micro A-V fistula by lung biopsy in a girl with cyanosis and clubbed fingers in whom calculated anatomic shunt was 30%.

In the second place, the problem of site of hypoxic pulmonary vasoconstriction was discussed.

The author measured the internal diameters in isolated lobe breathing hypoxic gas mixture using rapidly frozen method.

The result showed that the site of constrictive response was muscular artery at the level of terminal or respiratory bronchiole. The rank correlation coefficient between fourth power of measured diameter and estimated change in shunt flow was  $+0.64$ .

Lastly, clinical observations on postthoracotomy respiratory acidosis were presented. The results showed the presence of obstructive functional disturbance may affect the occurrence of postthoracotomy respiratory acidosis.